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ABSTRACT

The first set of National Longitudinal Study (NLS) data was analyzed to derive composite scores to be used in subsequent analyses. The composites include a general ability measure, a socioeconomic status (SES) index, and factor scores from factor analyses of sets of question items measuring goals, attitudes, and other psychological attributes. The derived composites can be used to help define subpopulations for descriptive statistics and as independent or control variables in some analytic studies. Procedures and results of the composite score analyses are presented. Four appendices contain Duncan's socioeconomic status metric for first followup questionnaire #93; group means for substitution of missing data; principal components factor matrices; analysis means; and means and standard deviations used for standardization. (Author/CP)

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National Longitudinal Study of the High School Class of 1972

Composite Score Analysis:
Ability Index, SES Index, Some Psychological
and Educational Construct Scales

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Composite Score Analysis:
Ability Index, SES Index, Some Psychological
and Educational Construct Scales

The first set of analyses of the National Longitudinal Study (NLS) data was performed to derive some composite scores to be used in subsequent analyses. These composites include a general ability measure, a socioeconomic status (SES) index, and factor scores resulting from factor analyses on sets of items measuring goals, attitudes, and other psychological attributes. The derivation of these composites are fundamental for the following reasons:

- 1) Variables such as ability and SES are critical for many of the proposed descriptive and analytical studies. These variables have been shown by a plethora of previous research to be consistently related to both academic and non-academic outcomes such as college performance and occupational status. Consequently, they will be used to help define subpopulations for descriptive statistics and as independent or control variables in some of the analytical studies. Composite variables measuring goals, attitudes, etc. should also be useful in the analytical modeling of the educational and work behavior of young adults.
- 2) In most cases, a score derived from several items measuring various aspects of a construct is a more accurate measure than the score from a single item. A good SES index, for example, should be derived from items reflecting the many salient aspects of SES characteristics. Similarly, conceptually appealing factors from several items measuring psychological attributes are preferred to single item indicators. In addition, the rules of parsimony and data manageability also require some reduction of data dimensions, especially when the data are amenable to such reduction as in the present situation.

Several analyses were thus performed to achieve the above objectives. Procedures and results of the analyses are presented in the following three sections. These sections concern the development of composites for (1) ability, (2) SES Index, and (3) measures of psychological constructs.

A. Ability

There are six subtests in the base-year aptitude battery. They are Vocabulary, Picture Number, Reading, Letter Groups, Mathematics, and Mosaic Comparisons. Although a number of composites of ability useful for different purposes could be derived, the most important ability composite would be a linear combination of these subtests that would reflect general academic aptitude or general ability.

Principal components analysis of the six subtests and a principal factor analysis with a varimax rotation of the six subtests suggest that a linear combination of four subtests—reading, letter groups, vocabulary, and mathematics, with units weights would be satisfactory for generating an overall academic measure (see Table 1). There was only one latent root greater than one. This root was associated with a principal component that accounted for 56 percent of the total variance. As indicated in Table 1, the first (largest) principal component with the exception of Mosaic Comparisons and Picture Number gave essentially equal weight to the remaining four subtests. Likewise, the rotated factor that explained the most common variance gave essentially the same result. For other subsidiary analyses it may be desirable to construct other composites, but for the major analyses an equally weighted linear combination of the four subtests should suffice.

From the above considerations, it was thus decided that a simple sum over the four subtests would be a sufficient general ability index. These four test scores were standard scores with a mean of 50, and a standard deviation of 10. The sum of the four subtests should have a mean approximately equal to 200. Because the adjusted base-year student questionnaire weights instead of the test battery weights were applied to computation, the observed mean of the composites was 203.6479. The standard deviation was 32.7434.

Table 1
FACTOR LOADINGS ON SIX SUBTESTS

Test	Loadings	
	First Principal Component	First Varimax Factor
Vocabulary	.75	.87
Picture Number	.62	.23
Reading	.83	.86
Letter	.82	.59
Math	.84	.80
Mosaic Comparison	.60	.13

To help define subpopulations for descriptive statistics, the ability composite distribution was categorized into--high, middle, and low ability groups. The high ability group corresponded roughly to the upper quartile, the low ability group to the lower quartile, and the middle ability group to the two middle quartiles. The assumption and procedures used to find the cutting points for the groups are described below. It was assumed that population ability scores were distributed normally. According to the unit normal distribution, the proportion of scores having a z-score greater than .675 is approximately 25 percent. Likewise, the proportion of scores having a z-score less than -.675 is also about 25 percent. Translating this to the mean and standard deviation of the composite scores, any score greater than 225.7497 would be in the upper quartile range, and any score less than 181.5461 would be in the lower quartile range. The remaining scores are in the middle two quartiles. A student was then given a code of 3, 2, or 1 depending on whether his composite score was in the upper, middle, or lower quartile range.

It should perhaps be reiterated that the ability composite mean and standard deviation were weighted. They can be considered as population parameters. Using these parameters to classify sample students, the proportion of student in the upper or lower quartile may be somewhat greater or smaller than 25 percent of the total sample. This was the case in the analysis, especially for the lower quartile range because low SES students who generally average lower in aptitude were over sampled. Students in the

lower quartile category thus comprised more than 25 percent of the total sample students, and students in the upper quartile comprised less than 25 percent of the total sample. In other words, the weighted distribution is fairly symmetrical while the unweighted sample distribution is skewed toward the left.

B. SES Index

SES has been a critical independent variable in many previous longitudinal studies. In the One-Year Follow-Up Studies (1966) dealing with the effects of socioeconomic status on post-high-school education, Project Talent used a linear composite of father's education, mother's education, father's occupation, family income, value of home, plus several household items. The nine items making up the composite were selected from a group of 25 status related variables which were analyzed for the expressed purpose of identifying items highly correlated with Project Talent's ability tests. The SES composite subsequently was divided into quartiles for tabular presentations. It is felt that a socioeconomic status index should be developed as much on conceptual as on empirical grounds.

The authors of the Coleman Report (1966) used a large cluster of "family background" variables in their analysis of student achievement. In addition to socioeconomic indicators, they included measures of urbanism, migration status, family size, and the expressed interests of the parents in their child's education. The cluster consequently aggregated measures of the home and community environment which do not conceptually belong in a family status index.

Since the appearance of these two reports (although in no way a consequence of them) there has been an unprecedented growth in sociology, both methodologically and conceptually, regarding knowledge of the effects of socioeconomic status on the occupational attainment process. This work essentially began with Blau and Duncan's landmark publication on the American Occupational Structure (1967) and has been followed by the work of Sewell and his associates. It is currently being continued in a series of analyses by Alexander and Eckland.

In its Final Report for the NLS base-year study, ETS attempted to develop (a) an SES composite index that would have comparable factor loadings across racial groups and (b) an index of financial capability which would be orthogonal to the SES composite. Both of these objectives are unrealistic. Moreover, several of the status-related variables ETS used in its composite index do not conceptually appear to be input variables (e.g., educational plans).

Education, occupation and income are very commonly employed in traditional SES composites. Even Duncan's SEI index which uses only one variable, occupation, to rank individuals is based upon the income and education of persons employed in different occupational categories, as derived from U.S. Census data. Along with numerous other items, these three variables were included in the ETS analysis. However, there is no reason to expect that the correlations between these items will be similar across racial groups. For example, if we were to presume that educational attainment had the same effects on occupational status or income for Blacks as it has for Whites, we would have to postulate the unlikely event that discrimination does not (or did not) exist against Blacks in the economic sphere. If discrimination does occur, we would expect generally lower correlations among these variables for Blacks, which the ETS report seems to bear out. Even though these differences exist among racial groups, a common SES composite is still useful for analytic purposes.

Among the status-related variables ETS included in their factor analysis were six items from the base-year questionnaire which may be more appropriately thought of as dependent variables or simply correlates of SES rather than as part of the cluster of variables that defines SES. These are "friends' college plans" (more commonly used as an index of peer influence than as a family status variable); the students' "career preference," "educational preference," and "educational plans" (all of which are correlated but dependent upon SES and certainly not defining one's SES background); a "brother/sister education" measure (another outcome or "significant other" variable); and "father's educational wishes" and "mother's educational wishes" (which also are "influence," not SES variables). The inclusion of these variables in a composite SES index is analogous to including measures of high school curriculum, college plans, and the IQ of one's siblings in a composite index of academic aptitude.

Two different approaches for dealing with socioeconomic status background are considered for the NLS data analysis. First, in the descriptive analyses, a composite index of socioeconomic status conceptually uncontaminated with other measures such as urbanism and migration will be utilized for classifying respondents. This seems to be desirable since the effects of status background on occupational and educational attainment will not be inflated by including conceptually distinct variables and conversely the effects will not be underestimated by relying on a single indicator of SES such as father's education

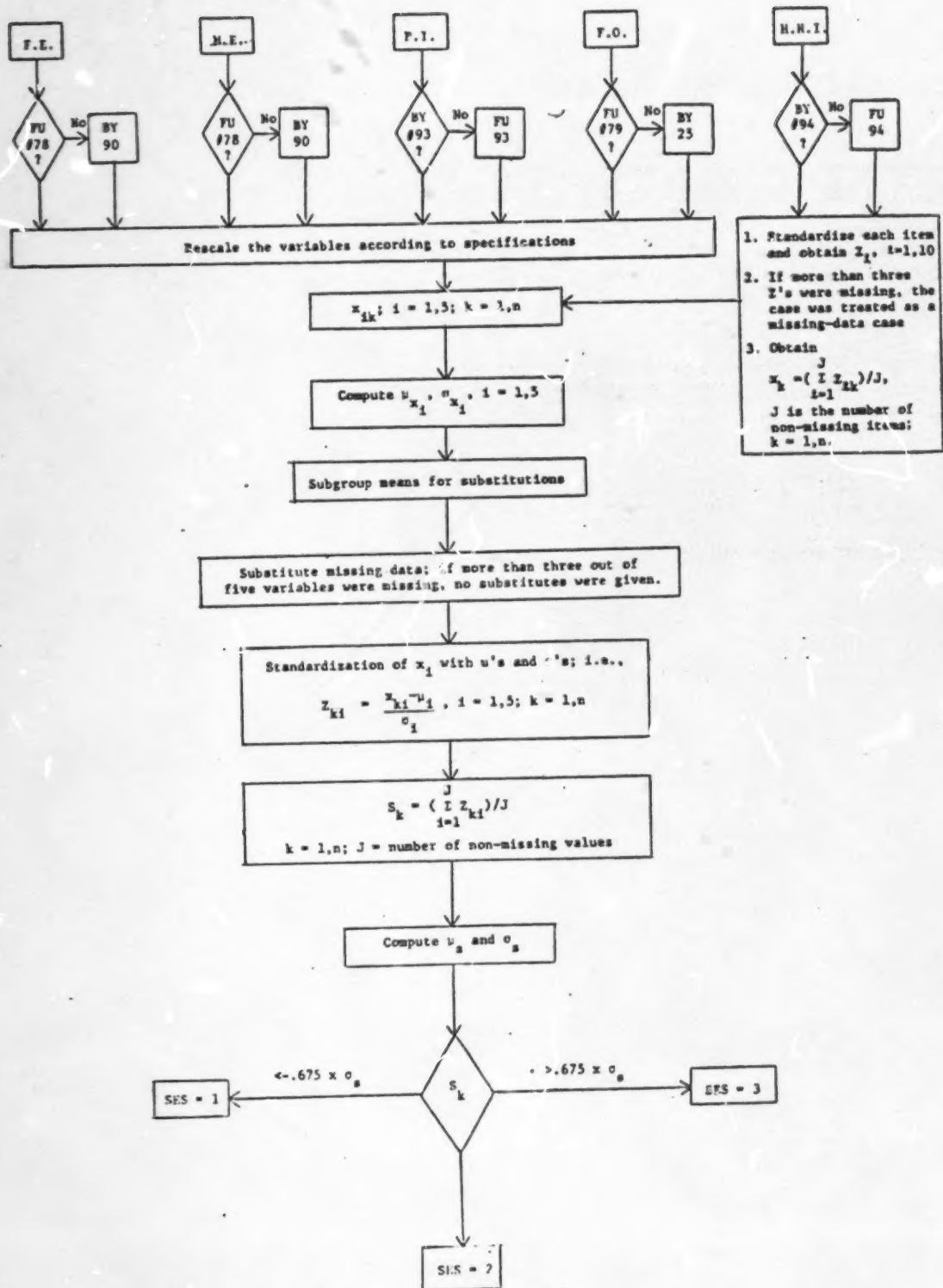
which was a major classification variable used by ETS in their descriptive analyses.

The second approach to be used in some of the analytical studies would involve keeping the indicators or components of a SES composite as separate entities since these indicators probably interact with one another and have differential effects for different subpopulations and different outcome variables. Some of the regression or path models will need to retain the clarity and separateness of the various SES indicators. Regression analysis allows much more freedom in the use of multiple indices than does cross-tabulation, and this advantage will be exploited.

The SES index considered for descriptive analysis was derived from an equally weighted linear composite of father's education, mother's education, father's occupation, family income and the household items from the first follow-up and/or base-year student questionnaire. The entire set of procedures are summarized in the flow chart on the following page. Specific procedures are further explicated in the following paragraphs.

- 1) Father's and mother's education level from first follow-up (FFU) question 78 and base-year question 90 were rescaled as indicated on pages 7-8. This rescaling process makes the two sets of information from the base-year (Q.90) and the follow-up (Q.78) surveys compatible. The responses to the follow-up Q.78 were checked first and used if available; if information was missing, the base-year Q.90 was then used. If education level was missing on both questions, then, of course, the education component of the SES index would be missing.
- 2) Parent's income was rescaled as shown on page 9. The rescaling process resulted in a new scale that was approximately interval in nature. This is, the means for each category would be approximately equally spaced from each other. The information was drawn from base-year Q. 93 first. If the information was missing, then the responses to follow-up Q. 93 were used.
- 3) Census Bureau codes for father's occupation from follow-up Q.79 were mapped into Duncan SEI scores (see Appendix A). If information was missing, then the responses to the base-year Q.25 were used. A special mapping into SEI scores was derived (see Table 2). The SEI score for each occupational category is the average of SEI scores for representative occupations listed under each category.

SES Derivation Flow Chart



FFU.78. What is the highest educational level completed by your mother and father? If you are not sure, please give your best guess.

	None or Grade School Only	High School		Vocational, Trade, Business, or Career Program in a School or College		Some College (Including Two-Year Degree)	Academic Programs		
		Did Not Finish	Finished	Less Than Two Years	Two Years or More		Finished College (Four or Five-Year Degree)	Master's Degree or Equivalent	Ph.D., M.D., or Equivalent
Father or male guardian	. . . 1 . . . 2 3 4 5 6 7 8 9								
Mother or female guardian	. . 1 . . . 2 3 4 5 6 7 8 9								
New Scale	1		2	3		4		5	

Br.90. What was the highest educational level each of the following persons completed? If you are not sure, please give your best guess.

	Father or Male Guardian	Mother or Female Guardian	Oldest Brother or Sister	New Scale
Doesn't apply	1	1	1	Blank
Did not complete high (secondary) school	2	2	2	1
Finished high school or equivalent	3	3	3	2
Adult education program	4	4	4	Blank
Business or trade school	5	5	5	} 3
Some college	6	6	6	
Finished college (four years)	7	7	7	4
Attended graduate or professional school (for example, law or medical school), but did not attain a graduate or professional degree	8	8	8	} 5
Obtained a graduate or professional degree (for example, M.S., Ph.D., or M.D.)	9	9	9	

93. What is the approximate income before taxes of your parents (or guardian)? Include taxable and non-taxable income from all sources.

(Circle one) New Scale

Less than \$3,000 a year (about \$60 a week or less)	01	1
Between \$3,000 and \$5,999 a year (from \$60 to \$119 a week)	02	2
Between \$6,000 and \$7,499 a year (from \$120 to \$149 a week)	03	3
Between \$7,500 and \$8,999 a year (from \$150 to \$179 a week)	04	
Between \$9,000 and \$10,499 a year (from \$180 to \$209 a week)	05	4
Between \$10,500 and \$11,999 a year (from \$210 to \$239 a week)	06	
Between \$12,000 and \$13,499 a year (from \$240 to \$269 a week)	07	5
Between \$13,500 and \$14,999 a year (from \$270 to \$299 a week)	08	
Between \$15,000 and \$18,000 a year (from \$300 to \$359 a week)	09	6
Over \$18,000 a year (about \$360 a week or more)	10	7

Table 2

DUNCAN SEI SCORES FOR BASE-YEAR Q.25

Occupation Code	Average Duncan SEI Score
1 Clerical	56.58
2 Craftsman	27.41
3 Farmer	28.00
4 Homemaker	Blank
5 Laborer	7.33
6 Manager	67.73
7 Military	Blank
8 Operative	19.18
9 Professional	70.21
10 Proprietor	49.70
11 Protective	38.00
12 Sales	54.42
13 Service	15.90
14 Technical	61.40

- 4) A household item composite score from base-year Q. 94 or follow-up Q. 94 was computed. Results of a factor analyses (in Table 3) showed that all the variables had almost equal weights. The procedures were as follows: (1) standardize item 94b through 94k using the weighted means and standard deviations (see Table 3); (2) reverse the sign of the item standard scores so that high scores would reflect possession of the household item in question; (3) treat those with less than four out of ten responses as cases with missing data; (4) sum the standard scores over non-missing items; and (5) divide the sum by the number of non-missing items. The decision of using the simple average of the standard scores is based on the results of the principal component analysis. The use of the average rather than the sum is to alleviate the problem of missing information. Study place was dropped from the composite because it had a low correlation with the first principal component and also had an ambiguous interpretation.

Table 3
MEANS AND STANDARD DEVIATIONS FOR BASE-YEAR Q.94
AND THE FIRST PRINCIPLE COMPONENT LOADINGS

Item	Mean	Standard Deviation	First Principle Component Loading
94b Newspaper	1.1030	.3040	.50
94c Dictionary	1.0147	.1203	.42
94d Encyclopedia	1.1050	.3066	.54
94e Magazine	1.0753	.2639	.46
94f Record Player	1.0383	.1919	.42
94g Tape Recorder	1.2828	.4504	.44
94h Color TV	1.3579	.4794	.48
94i Typewriter	1.1848	.3881	.53
94j Electric Dishwasher	1.6116	.4874	.50
94k 2 Cars	1.2480	.4319	.47

- 5) Subgroup means were computed on the above five SES components. The subgroups were defined by cross classifying race, high school program, and aptitude. The means were computed for each classification factor separately and for all two-way (e.g., race x aptitude) and three-way classifications. These means are included in Appendix B. In general, the number of subjects used in the computations is large enough to provide stable estimates. In many cases, the number is greater than 1,000. These estimates with less than 300 cases are indicated in the Appendix.
- 6) The subgroup means were substituted for the missing SES data. If values on more than three of the five variables for any single case were missing, then no SES composite was computed. The selection of a proper mean for substitution was determined by the availability of the three stratified variables. If a respondent had the three variables, the three-way classification means were used for substitutions. If a respondent had only two of the three variables, the corresponding two-way classification means were used. For other cases, the corresponding primary group means were used for substitutions of the missing data.
- 7) A factor analysis was performed on the five variables to determine if one factor could reasonably account for the intercorrelations of the five SES components. Results reveal a single factor solution with homogeneous weights to the five components.
- 8) The five variables were standardized and summed over the non-missing components. The sums were then divided by the number of non-missing components. The resultant scores were classified into upper, middle two, and lower quartiles, and each student was coded with a 3, 2, or 1 accordingly.

C. Measures of Some Psychological and Other Attributes

Included in the base-year questionnaire are sets of items measuring some psychological attributes and some other constructs. A number of completed factor analyses on these sets of items yielded several conceptually appealing factors (see Appendix C). Subsequently, scales resulting from these factors were constructed and investigated. The procedures and results are described in the following paragraphs.

In order to prevent artifactual correlations among the scales, no single item was included in more than one scale. In two instances, it was decided to allow a variable with only a moderate loading to help define a factor if its inclusion was conceptually compelling (even if it loaded substantially higher on another factor). Item 3 (job openings available) of Q. 26 had only a moderate loading on Factor III (convenience) and a high loading on Factor I (extrinsic job rewards), but it was decided to allow Item 3 to help define Factor III. Similarly, Item 2 (teachers don't help) of Q. 17 had a moderate loading on Factor II (school responsiveness) and a high loading on Factor IV (academic problems), but again it was decided on conceptual ground to allow Item 2 to help define Factor II rather than Factor IV.

There were three questions concerning goals in the base-year instrument. However, only one question (Q. 20) was common to both the base-year and the first follow-up instrument. These three base-year goal orientation questions were factored jointly rather than separately. Such a factoring produced an eight factor solution that had desirable properties.

Based upon the results of factor analyses, and some considerations as stated above, 32 composite variables were derived on the basis of the factor analyses summarized in Appendix C. These composites with their components are listed in Table 4.

Table 4

COMPOSITE NAMES AND CONSTITUENT ITEMS

Composites	Constituent Items from Base-Year Questionnaire	Attributes Measured
1 Work	Q.20--a,c,e	Goal orientations
2 Community	Q.20--f,g,j	
3 Family	Q.20--b,h,i	
4 Job prestige	Q.24--a,h,j	Career importance
5 Creativity freedom from supervision	Q.24--b,e,f	
6 People	Q.24--c,i	
7 Avoiding pressure	Q.24--d,g	
8 Self-concept	Q.21--a,c,d,h	Self-concept and locus of control
9 Control of Environment	Q.21--b,e,f,g	
10 Family and friend	Q.13--a,b,h,i	Source of planning discussion
11 Class-level personnel	Q.13--c,d	
12 Other institutional sources	Q.13--e,f,g	
13 Non-school adults	Q.3--a,b,f,g,h	Sources influencing choice of high school program
14 School personnel	Q.3--c,d,e	
15 Innovative approach	Q.4--e,f,g,h	Exposure to teaching techniques
16 Traditional approach	Q.4--a,b,c,d	
17 Extrinsic job rewards	Q.26--e,f,i	Factors determining work plans
18 Intrinsic job rewards	Q.26--g,h,j	
19 Convenience	Q.26--a,b,c	
20 Family problems	Q.17--e,f,j,k,m	Factors interfrerring with high school education
21 School responsiveness	Q.17--b,c,g,h,i	
22 Study time problem	Q.17--d,l	
23 Family and friends	Q.14--a,b,h,i	Sources of influence for post high school plans
24 Institutional personnel	Q.14--c,d,e,f,g	

--continued--

Table 4 (continued)

Composites	Constituent Items from Base-Year Questionnaire	Attributes Measured
25 Job security	Q.26--c,e,f,i,j	Life and work goals
26 Service to people	Q.20(j); Q.24(c,i); Q.26(j)	
27 Prestige	Q.20(c,f); Q.24(a,h,j)	
28 Creative work	Q.24(b,e,f); Q.26(d,g,r)	
29 Family orientation	Q.20(a,b,e,g)	
30 Avoiding pressure	Q.24(d,f,g)	
31 Job convenience	Q.26(a,b)	
32 Parental affiliation	Q.20(h,i)	

The responses of the items used for the composites were scored in the following fashion:

Question	Scoring	Descriptions
Q.3	1 → 3	Not important → Very important
Q.4	1 → 4	Never → Frequently
Q.13	1 → 3	Never → Often
Q.14	1 → 3	Not at all → A great deal
Q.17	1 → 3	Not at all → A great deal
Q.20	1 → 3	Not important → Very important
Q.21	1 → 5	Strongly agree → Strongly disagree
Q.24	1 → 3	Not important → Very important
Q.26	1 → 3	Not important → Very important

For each factor a linear composite score was computed to approximate the factor. The procedures were as follows: (1) each item defining a factor was standardized using the weighted mean and weighted standard deviation (see Appendix D); (2) non-missing standardized items that defined a factor were summed; and (3) the sum was divided by the number of non-missing items. The resultant value was a composite score.

Weighted means and standard deviations were computed for each composite for each subgroup defined separately by sex, race, ability, high school program, and father's occupation. Table 5 presents indications (+ sign) for those scale scores that differentiate subgroups within each of the five classification variables by at least .10. The standard deviation of all 32 composites was between .50 and .90. No statistical tests were conducted because small differences would be significant due to the large number of degrees of freedom since the sample size is about 17,700.

From Table 5 it is seen that there are group differences on most of the scales. Only a few scales seem to yield virtually no difference among groups. These few scales are: (3) family, (5) creativity, (28) creative work, and (32) parental affiliation. Family and parental affiliation scales have some common items. The common items for the two sets of scales resulted because variables 28 and 32 were derived on the basis of a factor analysis that cut across three sets of items; one of these item sets was used in deriving scales 3 and 5. These four scales discriminated only on the basis of father's occupation. The remaining 28 scales discriminated on the basis of at least three of the five classification variables. Nineteen of these variables discriminated on four or all five of the classification variables.

Internal consistency reliability estimates were also computed for each scale and presented in Table 5. Cronbach's coefficient alpha formula was used. The coefficient alpha's ranged from .24 to .73 with 21 of them ranging from .50 to .73. Scales that had a coefficient alpha less than .50 were (2) community orientation, (3) family orientation, (7) avoiding pressure, (12) institutional sources, (15) innovative approach, (16) traditional approach, (19) convenience, (22) student-time problem, (30) avoiding pressure, (31) job convenience, and (32) parental affiliation scales. In general, the reliabilities were satisfactory especially when the brevity of the scales are considered.

Intercorrelations among the 32 factors scores were computed and presented in Table 6. Because of the large number of degrees of freedom (about 16,000),

Table 5

COEFFICIENT ALPHA AND RELATIONSHIPS BETWEEN 32 COMPOSITE SCORES
AND FIVE CLASSIFICATION VARIABLES

Composites	Groups					Coefficient Alpha
	Sex	Race	High School Program	Ability	Father's Occupation	
1 Work	+	+	+	+	+	.53
2 Community		+		+	+	.44
3 Family					+	.30
4 Job Prestige	+	+		+	+	.60
5 Creativity					+	.58
6 People	+	+	+		+	.61
7 Avoid pressure			+	+	+	.34
8 Self concept		+	+	+	+	.66
9 Control of environment	+	+	+	+	+	.56
10 Family and friends	+	+	+	+	+	.55
11 Class personnel		+	+	+	+	.50
12 Institution sources		+		+	+	.40
13 Non-school adults		+	+	+	+	.59
14 School personnel		+	+	+	+	.55
15 Innovative approach	+	+	+	+	+	.40
16 Traditional approach	+	+	+	+	+	.41
17 Extrinsic rewards	+	+	+	+	+	.75
18 Intrinsic rewards	+	+			+	.55
19 Convenience		+	+	+	+	.43
20 Family problems		+	+	+	+	.58
21 School responsiveness		+	+	+		.64
22 Study time problem	+	+	+	+	+	.25
23 Family and friends	+	+		+	+	.59
24 Institutional personnel		+	+	+	+	.57
25 Job security		+	+	+	+	.73
26 Service to people	+	+			+	.68
27 Prestige	+	+		+	+	.73
28 Creative work					+	.65
29 Family orientation		+	+	+	+	.58
30 Avoiding pressure			+	+	+	.40
31 Job convenience			+	+	+	.36
32 Parental affiliation					+	.24

any correlation coefficient greater than .02 or .03 is statistically significant. Cursory examination of Table 6 indicates that scales 25 through 32 each correlate highly with shorter scales that contain a subset of the items contained in the longer scales 25 through 32. With the exception of scale 29 which correlated .74 with scale 1, the remaining correlations were in high .80s and low .90s. This indicates that the last eight scales don't have to be retained in the file and that only scales 1 through 24 need to be considered for future analyses.

Based on scale reliabilities, scale intercorrelations, and the relationships of the scales with five classification variables, the following tentative recommendations are suggested.

- 1) Composite 3 (family orientation) should be dropped because its reliability is only .30, correlates with only one classification variable (father's education) and has no practically significant correlation with any of the remaining 23 scales.
- 2) The remaining 23 composites should be retained for subsequent analyses.

Table 6

INTERCORRELATIONS AMONG 32 COMPOSITE SCORES

Composite																																
C01	1.00																															
C02	.28	1.00																														
C03	.20	.19	1.00																													
C04	.50	.38	.13	1.00																												
C05	.06	.24	-.07	.24	1.00																											
C06	.02	.37	.09	.14	.29	1.00																										
C07	.13	.12	.07	.18	.26	.13	1.00																									
C08	-.08	-.12	-.06	-.14	-.11	-.08	-.01	1.00																								
C09	-.05	.01	.07	-.11	-.03	.10	-.05	-.15	1.00																							
C10	.04	.13	.13	.04	.05	.20	.04	-.11	.16	1.00																						
C11	.03	.14	.07	.07	.09	.17	-.00	-.10	.16	.36	1.00																					
C12	.03	.17	.06	.10	.06	.12	.01	-.06	-.01	.21	.28	1.00																				
C13	.12	.23	.12	.19	.08	.16	.04	-.04	-.14	.21	.11	.24	1.00																			
C14	.11	.21	.08	.18	.08	.13	.03	-.04	-.11	.09	.26	.25	.46	1.00																		
C15	.02	.11	.03	.07	.07	.08	.01	-.03	-.06	.09	.17	.17	.21	.23	1.00																	
C16	.60	.11	.03	.02	.10	.17	.02	-.11	.18	.24	.25	.12	.09	.10	.19	1.00																
C17	.43	.24	.13	.47	.12	.05	.26	-.10	-.07	.06	.03	.06	.15	.14	.07	.01	1.00															
C18	.12	.25	.04	.22	.35	.39	.17	-.11	.05	.15	.12	.07	.13	.12	.08	.12	.35	1.00														
C19	.17	.14	.09	.19	.09	.08	.12	-.04	-.09	.11	.07	.12	.21	.18	.12	.03	.36	.19	1.00													
C20	.06	.11	-.06	.13	.09	.03	.05	.11	-.29	-.05	-.05	.09	.20	.16	.11	-.05	.13	.06	.12	1.00												
C21	-.04	.02	-.16	.04	.16	-.00	.05	.10	-.23	-.07	-.12	-.01	.06	.01	-.05	-.09	.02	.03	.04	.39	1.00											
C22	.02	-.01	-.06	.07	.04	-.06	.04	.13	-.13	-.05	-.05	.00	.01	.00	-.03	-.06	.06	.00	.05	.27	.23	1.00										
C23	.12	.21	.13	.18	.09	.17	.07	-.06	-.03	.47	.22	.21	.46	.28	.16	.14	.18	.15	.24	.11	.02	.00	1.00									
C24	.08	.26	.08	.17	.10	.17	.03	-.07	-.05	.18	.41	.55	.39	.47	.26	.15	.12	.12	.17	.14	-.01	-.02	.42	1.00								
C25	.38	.28	.14	.44	.15	.19	.27	-.10	-.07	.10	.06	.09	.19	.17	.10	.04	.92	.51	.50	.14	.02	.04	.22	.15	1.00							
C26	.05	.55	.09	.18	.32	.89	.16	-.10	.09	.21	.18	.14	.20	.17	.11	.17	.15	.55	.13	.06	.02	-.04	.21	.21	.34	1.00						
C27	.60	.49	.15	.94	.23	.12	.15	-.15	-.12	.03	.07	.11	.20	.19	.07	.02	.46	.20	.19	.13	.03	.06	.19	.19	.42	.17	1.00					
C28	.09	.25	-.05	.25	.84	.30	.24	-.13	.00	.09	.12	.07	.11	.11	.09	.13	.24	.68	.17	.10	.15	.04	.13	.12	.28	.36	.24	1.00				
C29	.74	.50	.47	.32	.03	.15	.16	-.07	.02	.13	.06	.07	.15	.13	.04	.03	.37	.16	.17	.06	-.08	-.01	.16	.12	.36	.19	.36	.06	1.00			
C30	.13	.13	.01	.24	.53	.12	.88	-.02	-.11	.00	-.02	.01	.05	.03	.02	.00	.25	.23	.13	.09	.13	.08	.06	.03	.25	.15	.22	.47	.11	1.00		
C31	.11	.11	.08	.14	.09	.06	.06	-.03	-.08	.10	.07	.11	.18	.15	.10	.03	.18	.15	.88	.10	.05	.05	.22	.15	.24	.09	.14	.16	.11	.09	1.00	
C32	.12	.11	.86	.09	-.07	.05	.03	-.07	.06	.09	.06	.04	.10	.07	.04	.02	.07	.00	.08	-.08	-.16	-.06	.11	.07	.08	.04	.11	-.06	.18	-.02	.08	1.00
C01	C02	C03	C04	C05	C06	C07	C08	C09	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31	C32	

Appendix A

Duncan SEI Scores for Follow-Up Q.93

Metrics of Occupational Status Reconciled to the 1970 Bureau
of Census Classification of Detailed Occupational
Titles (Based on Census Technical Paper No. 26,
"1970 Occupation and Industry Classification Systems in Terms of
Their 1960 Occupation and Industry Elements")

<u>1970 Detailed Census Codes</u>	<u>Duncan^a SEI Scores</u>	<u>Seigel-NORC^b Prestige Scores</u>	<u>Treiman^c Prestige Scores</u>
001	76.8	55.9	60.6
002	85.2	66.7	69.1
003	65.0	50.6	57.5
004	65.0	50.6	57.5
005 ^d	65.0	50.6	
006	87.0	71.1	55.2
010	89.9	67.2	66.4
011	84.0	67.8	70.3
012	84.0	69.4	65.1
013	85.5	55.6	54.9
014	80.2	62.1	65.6
015	83.1	58.4	59.0
020	85.0	61.6	62.8
021	81.0	57.1	59.1
022	87.0	50.6	55.2
023	86.9	67.0	55.5
024	83.0	53.9	57.4
025	48.0	53.9	57.4
026 ^d	83.0	63.9	
030	93.0	75.7	73.0
031	92.3	75.1	72.6
032	60.0	54.6	54.5
033	74.6	59.6	63.7
034	81.0	55.4	67.8
035	80.0	65.0	66.1
036	81.0	55.4	67.8
042	80.0	55.8	66.1
043	62.0	47.0	45.5
044	80.0	67.7	66.1
045	79.4	67.1	66.2
051	80.0	67.2	66.1
052 ^o	80.0	67.2	66.1
053	80.0	73.8	66.1
054	77.2	75.1	64.5
055	65.7	50.8	57.9
056	83.6	55.8	56.5
061	75.0	60.0	62.5
062	96.0	73.6	70.5
063	79.0	62.0	59.7
064	81.3	60.3	63.8
065	92.1	81.2	77.6

1970 Detailed
Census Codes

Duncan^a
SEI Scores

Seigel-NORC^b
Prestige Scores

Treiman^c
Prestige Scores

071	58.0	36.7	51.6
072	78.0	58.7	61.4
073 ^e	99.0	36.7	51.6
074	39.0	52.1	52.1
075	44.3	60.1	52.9
076	60.0	40.5	53.2
080	48.0	61.0	52.4
081 ^d	48.0	61.0	
082	60.0	54.6	54.5
083	48.0	61.0	52.4
084	48.0	61.0	52.4
085	52.2	49.8	49.2
086	52.0	69.0	59.7
090	56.7	55.0	40.3
091	74.4	53.6	62.9
092 ^e	81.0	71.4	67.8
093	81.0	71.4	67.8
094 ^e	81.0	71.4	67.8
095	65.0	50.6	57.5
096	81.0	65.6	67.8
100	64.0	52.4	56.3
101	67.0	48.6	48.9
102	84.0	78.3	77.6
103	84.0	78.3	77.6
104	84.0	78.3	77.6
105	84.0	78.3	77.6
110	84.0	78.3	77.6
111	84.0	78.3	77.6
112	84.0	78.3	77.6
113	84.0	78.3	77.6
114	84.0	78.3	77.6
115	84.0	78.3	77.6
116	84.0	78.3	77.6
120	84.0	78.3	77.6
121	84.0	78.3	77.6
122	84.0	78.3	77.6
123	53.2	46.8	45.7
124	64.0	53.2	50.4
125	84.0	78.3	77.6
126	84.0	77.6	77.6
130	84.0	78.3	77.6
131 ^e	72.0	53.2	50.4
132	84.0	78.3	77.6
133	84.0	78.3	77.6
134	84.0	78.3	77.6
135	84.0	78.3	77.6
140	84.0	78.3	77.6
141	61.3	44.3	48.2
142	71.2	53.9	56.7
143 ^d	72.0	56.1	
144	70.2	59.8	59.0
145	62.3	44.2	54.0

1970 Detailed
Census Codes

Duncan^a
SKI Scores

Siegel-WCRC^b
Prestige Scores

Treiman^c
Prestige Scores

150	62.0	47.2	56.5
151	62.0	47.0	46.7
152	67.0	56.1	54.9
153	62.0	51.6	47.0
154	64.1	49.5	54.4
155	62.0	47.0	48.4
156 ^e	53.0	46.8	45.7
161	48.4	53.1	57.5
162	62.0	47.0	46.6
163	79.0	70.6	66.5
164	69.0	42.8	52.8
165	60.8	51.7	40.7
170	48.0	48.2	49.6
171	69.0	42.8	52.8
172	62.0	47.0	45.5
173	62.0	47.2	55.9
174	65.0	50.6	57.5
175	60.0	55.0	51.5
180	61.8	51.9	49.2
181	76.0	59.8	61.7
182	45.0	37.6	40.5
183	70.5	56.5	54.9
184	82.0	51.2	56.1
185	52.0	46.0	44.7
190	67.0	56.2	57.2
191	50.0	40.5	45.1
192	82.0	56.7	52.3
193	65.0	50.6	57.5
194	40.2	38.6	39.5
195	65.0	50.6	57.5
201	61.2	49.6	51.0
202	79.5	66.1	62.4
203	50.5	43.0	43.6
205	72.1	50.0	49.3
210	74.0	48.8	48.8
211	59.0	52.2	33.6
212	74.1	63.9	69.7
213	57.6	39.6	60.5
215	55.0	42.3	60.3
216	32.0	38.3	24.5
220	74.0	57.8	59.6
221	49.9	56.7	51.7
222	80.4	59.8	54.9
223	59.9	54.0	57.3
224	61.3	58.4	58.1
225	74.7	46.4	49.8
226	58.2	40.9	38.7
230	37.6	38.7	42.8
231	70.6	48.5	49.9
233	74.2	54.5	55.5
235	77.9	70.6	71.2
240	71.7	61.7	59.8
245	61.8	46.0	57.4

1970 Detailed
Census Codes

Duncan^a
SEI Scores

Siegel-NORC^b
Prestige Scores

Treiman^c
Prestige Scores

260	66.1	42.3	32.3
261	40.0	31.9	39.2
262	35.0	28.3	28.3
264	08.8	18.7	22.0
265	66.0	46.8	44.5
266	27.0	15.4	14.1
270	62.0	44.0	49.0
271	72.0	51.2	56.2
281	65.0	49.1	28.2
282	60.9	39.9	28.3
283	39.0	28.9	28.3
284	39.0	28.8	28.2
285	52.7	35.8	32.1
301	52.0	49.5	47.6
303	44.0	36.2	37.5
305	50.8	47.3	48.7
310	44.0	31.4	31.8
311 ^e	44.0	31.4	31.8
312	43.6	35.8	37.2
313	43.3	28.4	30.0
314	44.0	36.2	37.5
315	39.9	33.3	36.9
320	44.0	36.2	37.5
321	59.2	42.9	47.0
323	43.7	36.0	37.5
325	44.0	31.4	32.0
326	62.1	47.6	49.2
330	44.0	40.4	40.7
331	53.0	42.3	32.8
332	43.0	35.1	36.7
333	28.2	19.4	26.0
334	44.0	36.2	37.5
341	44.9	43.7	47.5
342	45.0	44.0	49.0
343	45.0	44.9	49.0
344	45.0	44.9	49.0
345	45.0	44.9	49.0
350	45.0	44.9	49.0
355	45.0	44.9	49.0
360	44.0	41.2	43.7
361	44.7	42.3	38.6
362	44.0	36.2	37.5
363	67.8	43.0	47.5
364	44.0	37.1	37.6
370	61.0	45.8	53.0
371	61.0	45.8	53.0
372	62.3	46.5	53.5
374	24.2	29.9	30.2
375	43.7	35.8	37.2
376	61.0	43.3	41.6

<u>1970 Detailed Census Codes</u>	<u>Duncan^a SES Scores</u>	<u>Siegel-NORC^b Prestige Scores</u>	<u>Trainor^c Prestige Scores</u>
381	44.3	25.0	32.8
382	63.2	49.3	55.7
383	22.0	29.8	44.3
384	47.0	43.5	45.3
385	45.0	40.4	38.5
390	59.8	35.4	35.8
391	61.0	41.3	41.6
392	41.9	35.9	37.1
394	43.7	36.2	37.4
395	44.0	36.2	37.5
401	21.6	32.5	34.3
402	21.9	34.0	33.3
403	16.0	35.5	34.3
404	32.6	30.6	30.9
405	39.0	31.3	32.5
410	27.0	35.7	34.1
411	32.0	40.8	36.6
412	19.7	32.3	32.1
413	22.3	38.1	39.8
415	18.9	39.7	37.2
416	31.0	40.8	36.6
420	12.0	32.8	28.1
421	19.0	31.6	34.4
422	52.0	38.0	46.5
423	40.0	40.8	36.6
424	21.0	38.7	34.1
425	40.0	37.4	32.5
426	48.0	61.0	52.4
430	44.0	49.2	44.5
431	37.0	40.8	36.6
433	49.0	39.2	35.5
434	55.0	38.0	42.2
435	47.0	41.2	41.2
436	22.8	31.5	30.8
440	17.3	31.4	33.7
441	49.2	45.4	39.3
442	23.0	35.5	35.0
443	17.3	29.1	29.4
444	39.5	35.2	35.3
445	25.2	26.7	27.5
446	21.7	35.3	30.6
450	22.4	31.0	31.3
452	41.3	31.3	32.9
453	36.4	37.5	46.5
454	33.5	46.4	40.1
455	57.8	50.8	43.0
456	45.0	36.2	33.1
461	32.9	47.8	43.3
462	41.0	40.8	36.6
470	27.0	36.7	29.8
471	48.0	48.2	49.6
472	19.0	36.7	44.4

1970 Detailed
Census Codes

Duncan^a
SEI Scores

Siegel-MORC^b
Prestige Scores

Treiman^c
Prestige Scores

473	19.0	36.7	44.4
474	25.0	40.8	36.6
475 ^c	27.0	40.8	36.6
480	27.0	32.6	29.8
481	26.6	32.8	30.6
482	27.0	32.6	29.8
483	10.0	30.4	30.4
484	35.9	33.8	29.9
485	36.0	35.0	42.0
486	20.5	35.6	30.8
491	34.0	40.8	36.6
492	26.5	32.8	30.2
495	27.0	32.6	29.8
501	19.0	25.2	32.9
502	31.0	40.3	40.0
503	12.0	39.1	38.1
504	33.0	40.8	36.6
505	43.0	33.9	33.9
506	39.0	51.4	41.2
510	16.4	29.9	33.7
511	29.0	40.8	36.6
512	13.7	27.7	30.1
514	43.0	38.8	38.8
515	63.0	40.1	46.1
516	38.0	32.0	33.4
520	25.0	33.2	30.9
521	29.0	40.8	36.6
522	34.0	40.6	37.6
523	33.0	40.8	36.6
525	50.0	33.8	42.5
530	46.3	39.3	39.8
531	40.0	40.8	36.6
533	22.0	36.0	36.0
534	15.1	31.5	31.4
535	33.0	36.8	33.8
536	33.0	40.8	36.6
540	34.0	35.5	43.6
542	12.0	32.6	28.0
543	16.9	30.7	33.8
545	45.2	34.9	33.9
546	24.0	31.7	37.9
550	33.7	35.6	44.0
551	22.0	34.0	36.7
552	48.8	39.1	35.4
554	49.0	39.2	35.5
560	28.2	38.4	34.3
561	49.2	42.3	39.9
562	41.0	40.8	36.6
563	20.9	29.9	30.6
571	34.5	40.8	36.6
572	29.0	40.8	36.6
575 ^d	25.7	42.1	32.5
580 ^d	99.0		

<u>1970 Detailed Census Codes</u>	<u>Duncan^a SEI Scores</u>	<u>Siegel-NORC^b Prestige Scores</u>	<u>Treiman^c Prestige Scores</u>
601	32.0	28.4	28.4
602	17.2	27.5	38.4
603	11.0	32.1	36.8
604	18.4	23.3	34.7
605	25.0	39.4	45.5
610	19.1	36.1	42.7
611	17.7	20.3	27.5
612	18.7	28.8	33.6
613	23.0	31.7	26.3
614	21.6	26.2	33.6
615	24.5	36.4	33.4
620	12.0	25.0	25.1
621	20.2	23.1	29.4
622	18.1	32.9	45.1
623	17.9	21.2	33.4
624	17.0	32.9	34.9
625	12.2	23.6	35.6
626	29.0	32.9	38.1
630	15.0	16.8	22.1
631	28.8	32.0	31.5
633	16.4	31.6	31.8
634	18.0	19.4	22.3
635	19.8	30.1	37.4
636	46.0	33.4	32.3
640	16.4	26.4	36.8
641	17.6	27.5	33.0
642	15.0	24.2	34.9
643	18.0	19.5	22.5
644	18.1	29.0	29.2
645	42.1	35.9	35.9
650	24.9	31.7	35.5
651	21.9	19.0	27.3
652	21.5	31.8	35.5
653	21.0	31.1	34.6
656	19.4	30.4	37.8
660	20.1	31.7	34.8
661	16.0	33.7	29.0
662	04.9	27.6	29.4
663	18.2	25.2	28.3
664	09.2	31.6	26.0
665	23.8	34.9	39.5
666	16.6	31.7	33.8
670	03.1	28.9	29.6
671	21.0	29.4	29.4
672	04.4	28.2	30.3
673	05.9	25.0	30.4
674	06.1	28.8	29.6
680	24.0	40.1	39.2
681	19.6	32.1	35.2
690	19.0	23.7	33.4
692	18.8	29.3	34.1
694	19.2	29.2	33.7
695	19.1	29.2	33.1

1970 Detailed
Census Codes

SEI Scores

Prestige Scores

Prestige Scores

701	24.0	36.3	23.3
703	34.0	32.4	32.4
704	32.5	29.0	28.8
705	31.0	28.2	24.6
706	16.5	26.6	33.6
710	03.0	27.2	27.2
711	18.8	21.5	34.8
712	42.0	24.7	28.8
713	44.0	32.8	28.8
714	10.0	21.5	27.8
715	15.1	32.1	32.6
740	16.8	28.7	28.6
750	07.2	23.0	22.8
751	07.4	17.4	18.2
752	10.6	30.3	32.5
753	08.7	18.9	20.3
754	08.0	17.3	18.1
755	10.9	22.1	21.4
760	11.0	24.4	21.2
761	04.1	25.9	19.1
762	16.7	20.6	21.4
763	08.0	12.2	22.3
764	07.6	17.5	19.3
770	03.3	20.3	20.6
780	07.6	19.1	19.9
785	07.9	17.5	18.3
801	14.0	40.7	47.1
802	36.0	43.7	54.3
821	20.0	35.0	40.8
822	06.3	18.9	22.6
823	17.0	18.4	33.5
824	22.0	26.8	22.2
901	13.4	16.6	23.2
902	07.8	18.4	25.2
903	12.7	19.5	26.0
910	19.0	19.9	23.2
911	11.0	14.4	30.7
912	15.0	26.7	30.9
913	11.0	21.8	22.5
914	17.0	15.0	16.4
915	16.0	20.3	23.2
916	11.0	20.9	23.5
921	38.0	47.8	41.6
922	25.0	26.3	33.7
923	51.0	45.1	44.2
924	37.0	23.3	46.5
925	13.7	36.8	41.8
926 ^d	22.0	41.9	44.0
931 ^d	31.0	36.4	
932	19.1	15.6	20.6
933	26.3	21.7	33.5
934	07.8	17.5	28.7
935	17.0	37.9	30.4
940	30.0	22.1	28.2
941	08.0	09.3	12.2
942	28.2	24.0	32.7
943	10.0	20.9	24.3

1970 Detailed
Census Codes

Duncan^a
SEI Scores

Siegel-NORC^b
Prestige Scores

Treiman^c
Prestige Scores

944	17.0	33.2	40.1
945	31.0	40.8	36.6
950	31.0	36.4	37.2
952	26.0	14.1	29.1
953	25.0	14.9	24.6
954 ^d	11.0	14.4	
960	17.9	25.3	33.2
961	37.0	43.8	35.3
962	18.3	22.2	24.7
963	21.0	45.8	34.7
964	40.5	47.7	38.4
965	34.0	55.0	47.4
980	07.0	22.6	22.7
981	07.0	18.0	21.6
982	10.7	20.2	23.7
983	12.0	17.6	20.2
984	07.0	18.0	21.6

992 - military

987 - housewife

^aOtis Dudley Duncan's socioeconomic status metric described in A. J. Reiss and Others, Occupations and Social Status, New York: Free Press of Glencoe, 1961.

^bPaul M. Siegel's NORC prestige update is described in a 1970 University of Chicago unpublished Ph.D. dissertation, Table 5, Prestige in the American Occupational Structure.

^cDonald J. Treiman's prestige scores were recalculated from an unpublished source in which score equivalents were given to the International Labor Organization classification of occupations. Professor Treiman kindly made these available to me with the understanding that any use of these data be made only with prior permission from himself. They should not be cited without his consent, and he in no way is responsible for errors I may have introduced in rendering the ILO classification equivalent to the one used by the U.S. Census.

^dSiegel and Treiman scores for males were not computed for this occupation title, lacking information in Technical Paper #26 on the male composition of this 1970 category.

^eTechnical Paper #26 omitted compositional information on this title; scores were assigned on arbitrary basis of similarity to another title having requisite data.

Appendix B

Group Means for Substitutions of Missing Data

Race	Ability	High School Program	Father's Education	Mother's Education	Parent Income	Father's Occupation	Household Items
1-4			1.66	1.71	2.91	28.73	-.33
5-8			2.36	2.20	4.46	43.51	.05
	1		1.81	1.78	3.49	33.85	-.15
	2		2.25	2.12	4.25	42.26	.02
	3		2.84	2.56	4.84	49.77	.11
		1	2.09	2.00	4.00	38.59	-.06
		2	2.64	2.42	4.70	47.71	.09
		3	1.83	1.79	3.75	34.71	-.09
1-4	1		1.53	1.61	2.61	27.38	-.39
1-4	2		1.86	1.91	3.15	31.09	-.24
1-4	3		2.16*	2.34*	4.08**	42.07**	-.12*
5-8	1		1.91	1.85	3.87	36.24	-.05
5-8	2		2.28	2.13	4.35	43.08	.04
5-8	3		2.85	2.57	4.85	49.86	.11
1-4		1	1.60	1.62	2.74	27.49	-.38
1-4		2	1.92	2.01	3.29	33.57	-.21
1-4		3	1.48	1.54	2.74	25.52	-.37
5-8		1	2.17	2.06	4.23	40.29	-.00
5-8		2	2.70	2.46	4.83	48.82	.12
5-8		3	1.90	1.84	3.97	36.46	-.03
	1	1	1.82	1.79	3.51	33.84	-.15
	1	2	2.08	2.03	3.80	39.36	-.07
	1	3	1.69	1.68	3.33	31.46	-.18
	2	1	2.21	2.07	4.14	40.78	-.02
	2	2	2.48	2.29	4.54	46.19	-.09
	2	3	1.91	1.87	3.91	37.31	-.03
	3	1	2.62	2.46	4.55	47.42	.06
	3	2	2.93	2.62	4.96	50.93	.13
	3	3	2.23*	2.09*	4.14*	41.06*	-.01*
1-4	1	1	1.54	1.59	2.51	27.21	-.42
1-4	1	2	1.76	1.88	2.84*	32.07*	-.27
1-4	1	3	1.43	1.50	2.58	25.04	-.42
1-4	2	1	1.79*	1.79*	3.10*	28.41*	-.27*
1-4	2	2	2.01	2.08	3.28	34.02	-.21
1-4	2	3	1.66*	1.76*	2.96*	29.82*	-.27*

- continued -

Race	Ability	High School Program	Father's Education	Mother's Education	Parent Income	Father's Occupation	Household Items
1-4	3	1	1.59**	1.74**	3.72**	38.33**	-.03**
1-4	3	2	2.22**	2.37**	4.07**	42.82**	-.14**
1-4	3	3	2.37**	3.76**	5.37**	26.17**	.10**
5-8	1	1	1.90	1.85	3.90	35.93	-.06
5-8	1	2	2.25	2.11	4.31*	42.90	.04
5-8	1	3	1.81	1.75	3.68	34.05	-.08
5-8	2	1	2.24	2.09	4.23	41.73	.00
5-8	2	2	2.52	2.31	4.66	47.14	.11
5-8	2	3	1.92	1.88	3.98	37.71	-.02
5-8	3	1	2.63	2.47	4.54	47.45	.06
5-8	3	2	2.95	2.63	4.97	51.06	.13
5-8	3	3	2.22*	2.08*	4.12*	41.14*	-.01*

* The number of cases used for the estimation is in the range of 300 to 100.

** The number of cases used for the estimation is less than 100.

Race

- 1 American Indian
- 2 Black
- 3 Chicano
- 4 Puerto Rican
- 5 Other Latin American Origin
- 6 Oriental American
- 7 White
- 8 Other

Ability

- 1 Low
- 2 Middle
- 3 High

High School Program

- 1 General
- 2 Academic
- 3 Vocational-Technical

Appendix C

Principal Components and Factor Analysis

Goal Orientations (Q.20-10 items)

There were three latent roots greater than 1. The three factor varimax solution was

	Work	Orientation Community	Family
	<u>1</u>	<u>2</u>	<u>3</u>
1) Success in Work	<u>.62</u>	.13	.13
2) Marriage and Family	.23	.15	<u>.55</u>
3) Money	<u>.73</u>	-.04	-.09
4) Friendship	.10	<u>.34</u>	.22
5) Steady Work	<u>.69</u>	.12	.19
6) Leader	.31	<u>.60</u>	.03
7) Give Children Oppor- tunities	.34	<u>.43</u>	.33
8) Living Close to Home	.08	.25	<u>.53</u>
9) Getting Away	.12	.26	<u>-.74</u>
10) Correcting Inequi- ties	-.22	<u>.81</u>	-.09
Σ ai ²	1.7373	1.5029	1.3648

The three factor solution makes sense from a conceptual view point.

Career Importance (Q.24)

There were three principal components with latent roots equal to or greater than one. However, the fourth latent root was .9945, the fourth varimax factor had a positive internal consistency measure, and a four factor solution made more sense conceptually than a three factor solution. Consequently, the four factor varimax solution was adopted. The factor loading matrix is presented below.

	I Job Prestige	II Creativity Freedom from Supervision	III People	IV Avoiding Pressure
1) Money	<u>.68</u>	.01	-.27	.12
2) Creative	.02	<u>.76</u>	.24	-.02
3) Help Others	-.04	.28	<u>.76</u>	.03
4) Avoiding Pressure	-.08	.23	-.12	<u>.78</u>
5) Ideas	.06	<u>.72</u>	.28	.08
6) Freedom From Supervision	.20	<u>.64</u>	-.27	.23
7) Steady Progress	.22	-.04	.27	<u>.73</u>
8) Leader	<u>.70</u>	.23	.21	-.06
9) People	.15	.04	<u>.79</u>	.07
10) Respected	<u>.81</u>	.01	.17	.07

Self Concept and Control of Environment Items Factored Jointly (Q. 21)

A two factor varimax solution summarized the data nicely. One factor had high loading from the 4 self concept items and the other factor had high loadings from the 4 control of environment items. Each set of 4 items was previously factor analyzed and each set turned out to be essentially unidimensional. The joint factor analysis confirmed the fact that the items within each scale have higher intercorrelations than items between scales. The two factor varimax solution is presented below.

	Self Concept I	Control of Environment II
1) positive attitude	.73	-.09
2) luck more important than work	.08	.60
3) equal worth	.72	-.13
4) able to do as well as most people	.69	-.05
5) can't get ahead	-.22	.65
6) shouldn't plan	-.14	.73
7) accept condition	.04	.62
8) satisfied	.65	.08
Σa_i^2	2.02	1.75

High scores on Factor I reflect a negative self concept while high scores on Factor II reflect a positive level of Control of Environment.

Sources of Planning Discussion (B.Y.Q. 13)

Three varimax factors, all with low positive internal consistencies, were retained to explain the intercorrelations. Factor I was the most important factor. It had high loadings from non-institutional discussion sources (i.e., friends and relations). The remaining two factors involved planning discussions with institutional personnel. Factor II reflected discussion with non-administrative school staff (i.e., teachers and counselors) and Factor III concerned discussion with other institutional personnel (i.e., school principal, clergyman, and state employment officers). The rotated factor matrix is presented below.

<u>Discussion of Plans</u>	Family and Friends	Class Level School Personnel	Other Institutional Sources
	I	II	III
1) parents	<u>.48</u>	.42	-.20
2) other relative	<u>.69</u>	.17	.13
3) guidance counselor	.06	<u>.79</u>	.05
4) teacher	.25	<u>.63</u>	.26
5) principal	-.06	.40	<u>.61</u>
6) clergyman	.10	.23	<u>.56</u>
7) state employment officers	.08	-.18	<u>.71</u>
8) other adult	<u>.67</u>	-.07	.31
9) friends	<u>.66</u>	.12	-.07
Σ_{ai}^2	1.6786	1.4809	1.4105

Sources Influencing Choice of High School Program (B.Y.Q. 3)

<u>Influences</u>	<u>Non-School Personnel</u>	<u>School Personnel</u>
1) parents	<u>.53</u>	.17
2) other relatives	<u>.73</u>	.05
3) guidance counselor	.00	<u>.79</u>
4) teacher	.21	<u>.71</u>
5) principal	.39	<u>.55</u>
6) clergyman	<u>.59</u>	.29
7) other adults	<u>.67</u>	.04
8) friends	<u>.42</u>	.15

$\lambda =$

1.98

1.58

It is interesting to note the difference in factor structure between question 3 and question 13 (influences for post high school plans). For Q. 13 family and friend influences all loaded on a single factor while for Q. 3 they split off onto two factors. While all school personnel sources of influence loaded on a single factor for Q. 3, they split off onto two factors for Q. 13. Some but not all of the differences could be explained by the differences in the item sets for the two questions.

Exposure to Teaching Techniques (B.Y.Q. 4)

A two factor varimax solution had the most reasonable statistical and conceptual properties. Of the eight items, one factor had loading by 4 traditional (e.g., lectures, discussions, etc.) oriented approaches and the remaining factor had loadings by the 4 more innovative approaches (field trips, television lectures, etc.).

<u>Teaching Approach</u>	<u>I</u>	<u>II</u>
1) lectures	-.20	.63
2) discussion	.26	.61
3) project	.31	.48
4) writing essays, etc.	-.05	.63
5) field trips	.54	.08
6) individualized instruction	.64	.18
7) teaching machines	.58	-.03
8) television lectures	.52	-.06
$\sum a_i^2$	1.5187	1.4412

Factors Determining Work Plans (B.Y. Q. 26)

Three and four factor varimax solution were compared although only three latent roots of the correlation matrix were greater than 1. Three of the factors were highly similar for both solutions, and the four factor solution had more conceptual appeal. All the internal consistency measures were positive, although the last one was close to zero. The four factor solution is presented below.

<u>Variables</u>	<u>Factors</u>			
	<u>I</u> Extrinsic Job Rewards	<u>II</u> Intrinsic Job Rewards	<u>III</u> Convenience	<u>IV</u> Hobby
1) previous work experience	.05	.06	<u>.70</u>	.33
2) relative or friend in same line of work	.12	.04	<u>.80</u>	-.14
3) job openings available	<u>.66</u>	-.02	.31	.04
4) work matches a hobby	.07	.13	.08	<u>.88</u>
5) good income	<u>.83</u>	.05	.03	.12
6) job security and permanence	<u>.80</u>	.16	.03	.01
7) interesting work	.09	<u>.73</u>	.00	.15
8) freedom to make own decisions	.09	<u>.64</u>	-.01	.31
9) opportunity for promotion	<u>.67</u>	.34	-.03	-.04
10) working with friendly people	.18	<u>.73</u>	.15	-.22
Σa_i^2	2.2876	1.6406	1.2532	1.0944

This set of items looks particularly scalable by using factor scores. There were large elements in the correlation matrix which resulted in nicely defined factors. The first factor accounts for substantially more common variance than the remaining three factors and is also clearly significant from a conceptual viewpoint. The second factor will also be of interest to use in the analyses.

Factors Interferring with High School Education (Q. 17)

A four factor varimax solution was accepted over a three factor varimax solution. Three factors for both solution were highly similar. The rotated factor matrix is presented below.

Variables	Factors			
	I Family Problems	II School Responsiveness to Needs	III Study Time Problems	IV Academic Problems
1) courses too hard	.07	.00	.19	.76
2) teachers don't help	.15	.41	-.03	.66
3) school doesn't offer courses	.05	.62	-.04	.15
4) job takes too much time	.25	.09	.49	-.11
5) transportation problems	.54	.15	-.10	-.03
6) parents don't care	.46	.31	-.17	.29
7) don't feel part of school	.30	.64	.09	.00
8) hard to adjust to school	.11	.64	.34	-.16
9) poor teaching	-.04	.61	.10	.27
10) money problems	.67	.06	.26	.06
11) health	.50	.05	.12	.05
12) poor study habits	-.07	.17	.74	.20
13) family obligations	.68	-.00	.28	.10
14) no place to study	.34	-.02	.50	.19
$R^2_{a_1}$	1.9922	1.9120	1.4133	1.3280

Sources of influence for Post High School Plans (Q. 14)

A two factor varimax solution:

Variable	Factors	
	I Family and friends	II Institutional Personnel
1) parents	<u>.63</u>	.03
2) other relatives	<u>.68</u>	.14
3) guidance counselor	.45	<u>.40</u>
4) teacher	.43	<u>.46</u>
5) principal	.14	<u>.72</u>
6) clergyman	.09	<u>.61</u>
7) state employment officer	-.03	<u>.60</u>
8) other adult	<u>.59</u>	.10
9) friends	<u>.65</u>	.04
$\lambda =$		2.06
		1.64

Sources of Influence for Post High School Plans (Q. 14)

A two factor varimax solution was accepted and is presented below.

<u>Variable</u>	<u>Factors</u>	
	<u>I</u> <u>Family and</u> <u>Friends</u>	<u>II</u> <u>Institutional</u> <u>Personnel</u>
1) parents	<u>.57</u>	<u>.13</u>
2) other relative	<u>.61</u>	<u>.25</u>
3) guidance counselor	<u>.40</u>	<u>.46</u>
4) teacher	<u>.41</u>	<u>.47</u>
5) principal	<u>.11</u>	<u>.70</u>
6) clergyman	<u>.10</u>	<u>.56</u>
7) state employment officer	<u>-.03</u>	<u>.56</u>
8) other adult	<u>.58</u>	<u>.14</u>
9) friends	<u>.64</u>	<u>.08</u>
10) yourself	<u>.50</u>	<u>-.29</u>

Joint Factor Analysis of Items from B.Y. Q. 20, 24, and 26 (life and work goals)

Eight rotated varimax factors were accepted to account meaningfully for the intercorrelation among 30 items across three questions. When each of the three questions' 10 items were separately factor analyzed, it took 11 factors (4, 4, and 3) to account for the item intercorrelations. The rotated factor matrix is presented below. Only factor loadings above .40 will be indicated.

Goals	I	II	III	IV	V	VI	VII	VIII
1) being successful	--	--	--	--	.61	--	--	--
2) marriage	--	--	--	--	.59	--	--	--
3) money	--	--	.61	--	--	--	--	--
4) friendship	--	--	--	--	--	--	--	--
5) steady work	--	--	--	--	.65	--	--	--
6) community leader	--	--	.66	--	--	--	--	--
7) give my children opportunity	--	--	--	--	.58	--	--	--
8) living near family	--	--	--	--	--	--	--	.60
9) getting away	--	--	--	--	--	--	--	.68
10) correcting social problems	--	.60	--	--	--	--	--	--
11) making money	--	--	.58	--	--	--	--	--
12) opportunity to be creative	--	--	--	.58	--	--	--	--
13) opportunity to be helpful	--	.71	--	--	--	--	--	--
14) avoiding job pressure	--	--	--	--	--	.74	--	--
15) living in world of ideas	--	--	--	.48	--	--	--	--
16) freedom from supervision	--	--	--	.46	--	.47	--	--
17) opportunity for moderate progress	--	--	--	--	--	.45	--	--
18) chance to become leader	--	--	.71	--	--	--	--	--
19) opportunity to work with people	--	.74	--	--	--	--	--	--
20) having respectable position	--	--	.63	--	--	--	--	--
21) previous work experience	--	--	--	--	--	--	.70	--
22) relative or friend in same work	--	--	--	--	--	--	.67	--
23) job openings available	.60	--	--	--	--	--	--	--
24) hobby	--	--	--	.59	--	--	--	--
25) good income	.71	--	--	--	--	--	--	--
26) job security	.74	--	--	--	--	--	--	--
27) interesting work	--	--	--	.52	--	--	--	--
28) freedom for own decisions	--	--	--	.63	--	--	--	--
29) opportunity for advancement	.63	--	--	--	--	--	--	--
30) friendly people	.43	.57	--	--	--	--	--	--
Σa_i^2	2.72	2.55	2.54	2.09	1.92	1.40	1.34	1.22

Five of the factors (I, V, VI, VII, and VIII) seem to be somewhat question specific. The remaining three factors cut across at least two factors. The factors are interpreted as follows:

- I. Job Security
- II. Service to People
- III. Prestige
- IV. Creative Work
- V. Family Orientation
- VI. Avoiding Pressure
- VII. Job Convenience
- VIII. Parental affiliation

Summary

A large number of Base Year factor analyses have been briefly described. Factor scores will be created for most of these factors by simply summing variables with high loadings. No item will be included in more than one scale to prevent artifactual correlations among the factors. This will yield factor scores that are somewhat correlated which in many instances might make more conceptual sense than orthogonal factors. Factors that have low internal consistency or account for little variance will be dropped from further consideration.

Appendix D

Means and Standard Deviations Used for Standardization

NLS - COMPOSITE VARIABLE ANALYSIS - COMPOSITE BASED ON ELEVEN SELECTIONS IN QUESTION # 3
TOTAL SAMPLE

MEANS AND STANDARD DEVIATIONS OF VARIABLES

VARIABLE LABEL	WEIGHTED N	ACTUAL N	MEAN	SIGMA(N-1)
INFT PAR	2703142.39	16120	2.1098	0.6813
INFT REL	2651183.34	15814	1.3090	0.5700
INFT CNS	2659366.09	15849	1.7427	0.6959
INFT TCH	2646239.92	15787	1.4922	0.6649
INFT PRN	2643140.97	15756	1.1652	0.4528
INFT CLG	2635971.62	15713	1.1184	0.3898
INFT ADL	2628722.84	15677	1.3307	0.6021
INFT FRN	2654761.89	15830	1.7966	0.6788
INFT SLF	2650969.70	15805	2.8691	0.3872
INFT QNL	2505712.61	14945	1.1920	0.4804
INFT ASS	2509534.63	14969	1.1849	0.4824

NLS - COMPOSITE VARIABLE ANALYSIS - COMPOSITE BASED ON EIGHT SELECTIONS IN QUESTION # 4
TOTAL SAMPLE

MEANS AND STANDARD DEVIATIONS OF VARIABLES

VARIABLE LABEL	WEIGHTED N	ACTUAL N	MEAN	SIGMA(N-1)
TCH LCT	2721455.03	16249	3.2523	0.7629
TCH DISC	2734374.49	16131	2.7303	0.8133
TCH PRCJ	2681211.25	15989	2.4655	0.9852
TCH ESAY	2686171.96	16027	2.8412	0.9127
TCH TRIP	2685238.09	16007	1.6787	0.7245
TCH INDV	2639142.81	16047	1.9821	0.8673
TCH PACH	2696157.38	16018	1.4815	0.8294
TCH IV	2705575.35	16143	1.3076	0.6198

NLS - COMPOSITE VARIABLE ANALYSIS - COMPOSITE BASED ON NINE SELECTIONS IN QUESTION # 13
TOTAL SAMPLE

MEANS AND STANDARD DEVIATIONS OF VARIABLES

VARIABLE LABEL	WEIGHTED N	ACTUAL N	MEAN	SIGMA(N-1)
PLAN PAR	2734630.45	16340	2.7516	0.4685
PLAN REL	2715301.80	16206	2.1098	0.7001
PLAN CNS	2708255.11	16167	2.0039	0.6728
PLAN TCH	2707067.65	16153	1.8079	0.7166
PLAN PRN	2708900.88	16163	1.1833	0.4378
PLAN CLG	2708475.86	16158	1.2169	0.4978
PLAN SES	2696641.83	16090	1.1177	0.3698
PLAN ADT	2697692.12	16092	1.9263	0.7745
PLAN FRN	2723753.24	16259	2.7103	0.5034

NLS - COMPOSITE VARIABLE ANALYSIS - COMPOSITE BASED ON TEN SELECTIONS IN QUESTION #14
TOTAL SAMPLE

MEANS AND STANDARD DEVIATIONS OF VARIABLES

VARIABLE LABEL	WEIGHTED N	ACTUAL N	MEAN	SIGMA(N-1)
INFF PAR	2732733.76	16326	2.3333	0.6482
INFF REL	2713753.10	16203	1.6755	0.7084
INFF CVS	2712773.29	16135	1.5485	0.6494
INFF TCH	2709024.09	16173	1.4972	0.6764
INFF PRN	2709909.19	16172	1.0950	0.3363
INFF CLG	2709984.02	16166	1.1365	0.4137
INFF SES	2700321.15	16115	1.0757	0.3068
INFF ADT	2697034.37	16103	1.7070	0.7427
INFF FAN	2702874.92	16140	1.9900	0.7086
INFF SLF	2717961.31	16228	2.8935	0.3605

NLS - COMPOSITE VARIABLE ANALYSIS - COMPOSITE BASED ON FOURTEEN SELECTIONS IN QUESTION # 17
TOTAL SAMPLE

MEANS AND STANDARD DEVIATIONS OF VARIABLES

VARIABLE LABEL	WEIGHTED N	ACTUAL N	MEAN	SIGMA(1-1)
INT CFSH	2712956.09	16230	1.4414	0.5380
INT THLP	2707681.61	16166	1.5747	0.6376
INT NCPS	2703970.31	16136	1.6512	0.7202
INT JJB	2693134.53	16101	1.2360	0.5133
INT TRNS	2704267.60	16136	1.1420	0.4237
INT PA	2632023.88	16074	1.3596	0.7005
INT NPRT	2702237.24	16123	1.4753	0.6708
INT ADUT	2703250.97	16126	1.3032	0.5754
INT PRTC	2695696.81	16084	1.6027	0.6566
INT MNY	2702800.57	16125	1.3587	0.6430
INT HLTH	2700869.78	16113	1.1419	0.4064
INT STDH	2701803.72	16128	1.6352	0.6762
INT FAM	2694260.63	16074	1.3190	0.5912
INT NSTP	2703271.97	16128	1.2957	0.5753

NLS - COMPOSITE VARIABLE ANALYSIS - COMPOSITE BASED ON THE TEN SELECTIONS IN QUESTION # 20
TOTAL SAMPLE

MEANS AND STANDARD DEVIATIONS OF VARIABLES

VARIABLE LABEL	WEIGHTED N	ACTUAL N	MEAN	SIGMA(N-1)
IMP SUCC	2727468.17	16294	2.8301	0.4109
IMP MARR	2716741.28	16223	2.7701	0.5236
IMP MONY	2716250.63	16227	1.9588	0.6337
IMP FRND	2722019.70	16250	2.7697	0.4691
IMP WORK	2715095.14	16214	2.7490	0.4954
IMP CLDR	2712717.60	16203	1.6635	0.6750
IMP CQPP	2708659.68	16162	2.6085	0.6054
IMP CPAR	2718417.27	16222	1.5745	0.6346
IMP AWAY	2715442.94	16204	1.5761	0.7325
IMP SOCP	2712712.09	16200	2.0633	0.6896

NLS - COMPOSITE VARIABLE ANALYSIS - COMPOSITE BASED ON EIGHT SELECTIONS IN QUESTION # 21
TOTAL SAMPLE

MEANS AND STANDARD DEVIATIONS OF VARIABLES

VARIABLE LABEL	WEIGHTED N	ACTUAL N	MEAN	SIGMA(N-1)
POS ATT	2713122.38	16210	2.1038	0.9597
LUCK>ARK	2713551.64	16206	4.1446	0.9277
EQUAL	2697801.59	16115	1.8946	0.8106
DCASWELL	2700919.67	16119	1.9544	0.8099
HINDER	2707447.87	16163	3.6393	1.0432
PLANNING	2712272.46	16193	3.7866	1.1297
ACCPT LF	2710603.82	16187	3.4006	1.3046
SATISFID	2709071.45	16182	2.3956	1.1031

NLS - COMPOSITE VARIABLE ANALYSIS - COMPOSITE BASED ON THE TEN SELECTIONS IN QUESTION # 24
TOTAL SAMPLE

MEANS AND STANDARD DEVIATIONS OF VARIABLES

VARIABLE LABEL	WEIGHTED N	ACTUAL N	MEAN	SIGMA(N=1)
CAR MONY	2722920.27	16258	2.0834	0.5948
CAR CREA	2712355.54	16176	2.2565	0.6768
CAR HELP	2711205.59	16175	2.4622	0.6209
CAR PRES	2705424.41	16135	2.0872	0.7205
CAR IDEA	2698447.35	16092	2.1936	0.6790
CAR SUPV	2694194.26	16047	1.9426	0.7225
CAR PRCG	2687896.66	16026	2.1943	0.6647
CAR LEAD	2703612.62	16124	1.7242	0.7189
CAR PEPL	2707537.80	16155	2.3423	0.7204
CAR LOOK	2714125.60	16189	1.9798	0.7261

MLS - COMPOSITE VARIABLE ANALYSIS - COMPOSITE BASED ON TEN SELECTIONS IN QUESTION # 26
TOTAL SAMPLE

MEANS AND STANDARD DEVIATIONS OF VARIABLES

VARIABLE LABEL	WEIGHTED N	ACTUAL N	MEAN	SIGMA(N-1)
CAR EXPR	2680841.49	15982	1.7279	0.7661
CAR REL	2681407.52	15983	1.5901	0.7140
CAR AVAL	2673601.64	15937	2.0138	0.7502
CAR HBBY	2665586.56	15881	1.8422	0.8060
CAR SINC	2674292.12	15940	2.1245	0.6999
CAR SECU	2662474.11	15864	2.2442	0.7154
CAR IMPT	2683163.62	15994	2.7614	0.4785
CAR FREE	2668681.56	15917	2.3235	0.6609
CAR ADVN	2667178.39	15895	2.2430	0.7239
CAR FRND	2683410.08	16004	2.4915	0.6433